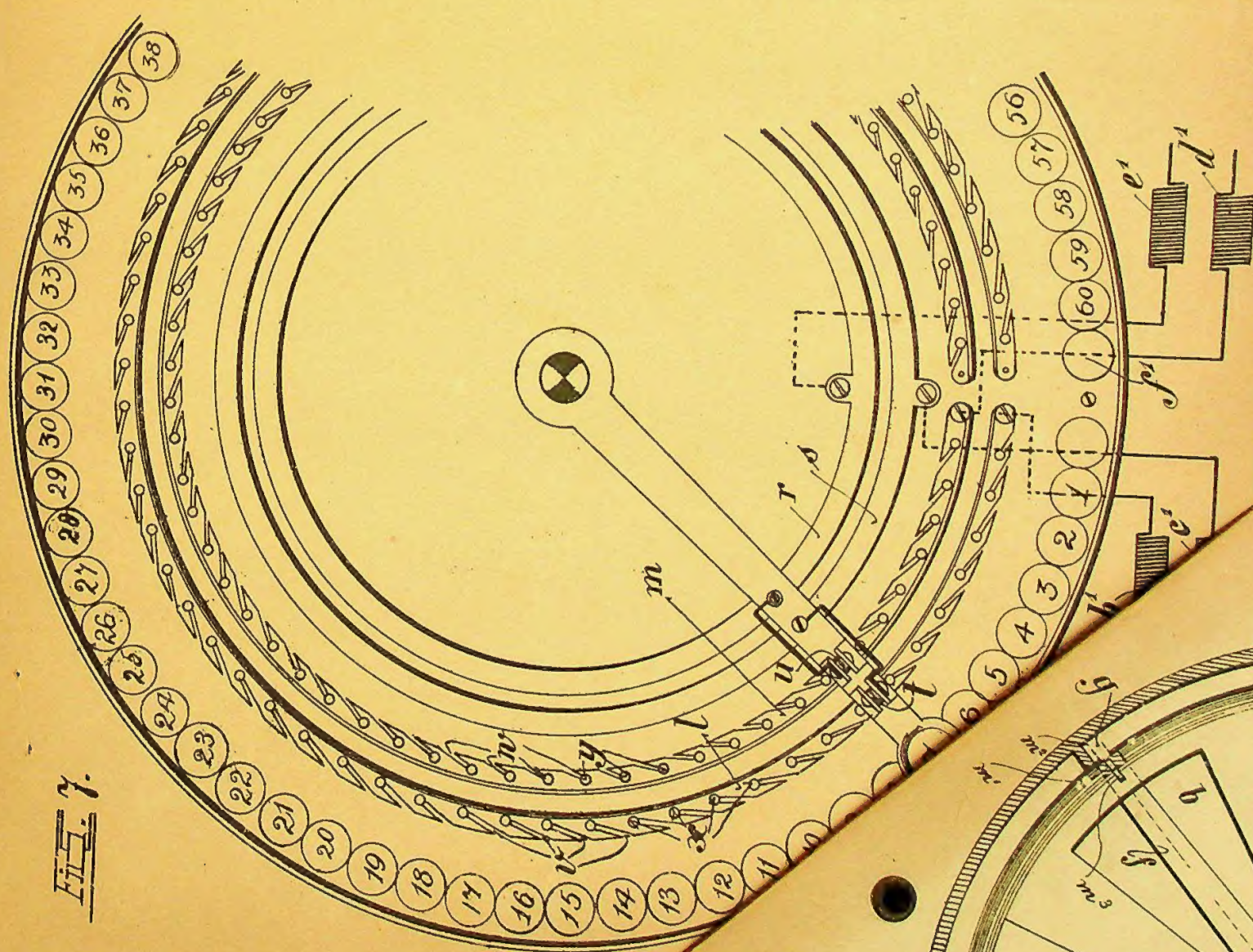
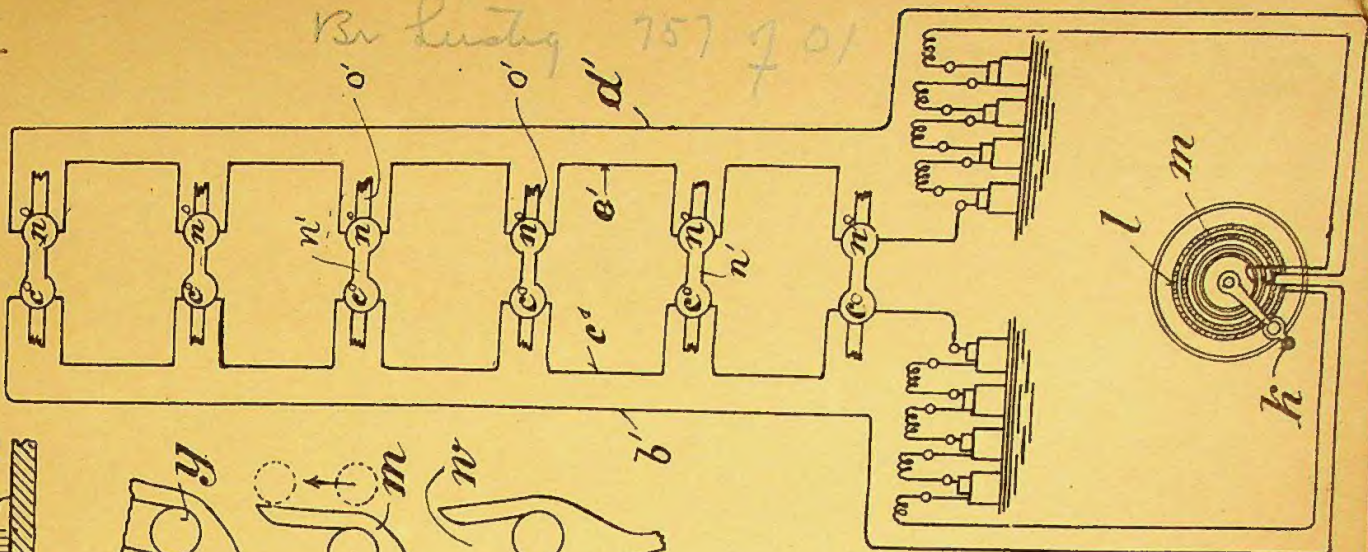
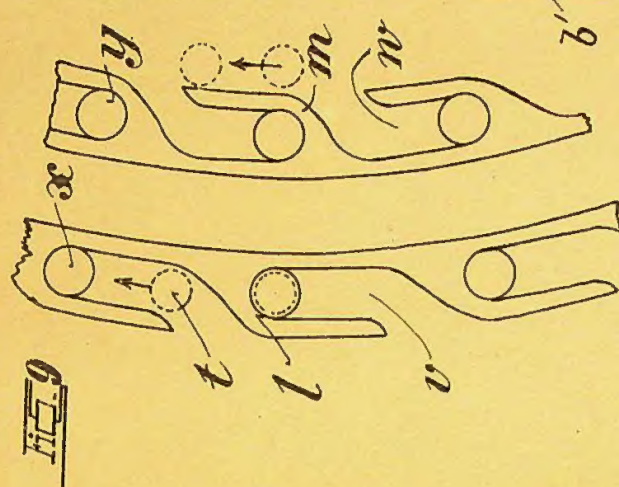
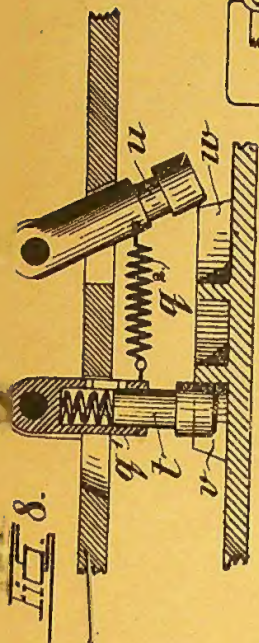






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Fig. 8.

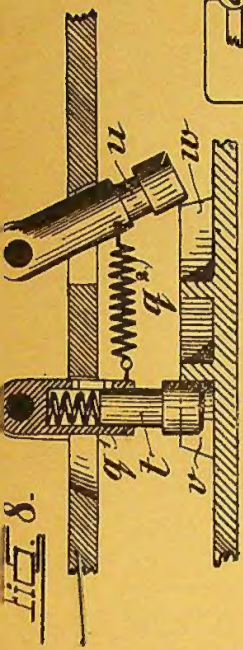


Fig. 9.

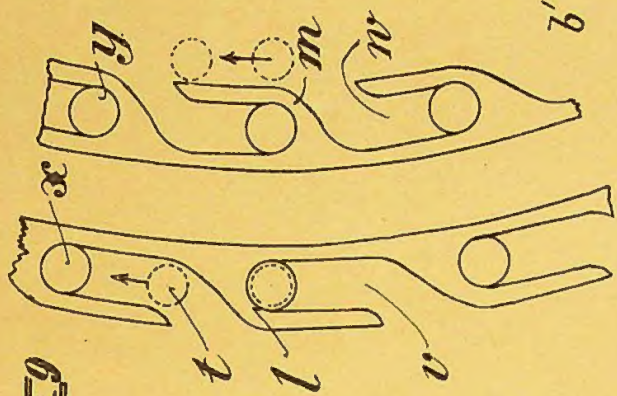


Fig. 10.

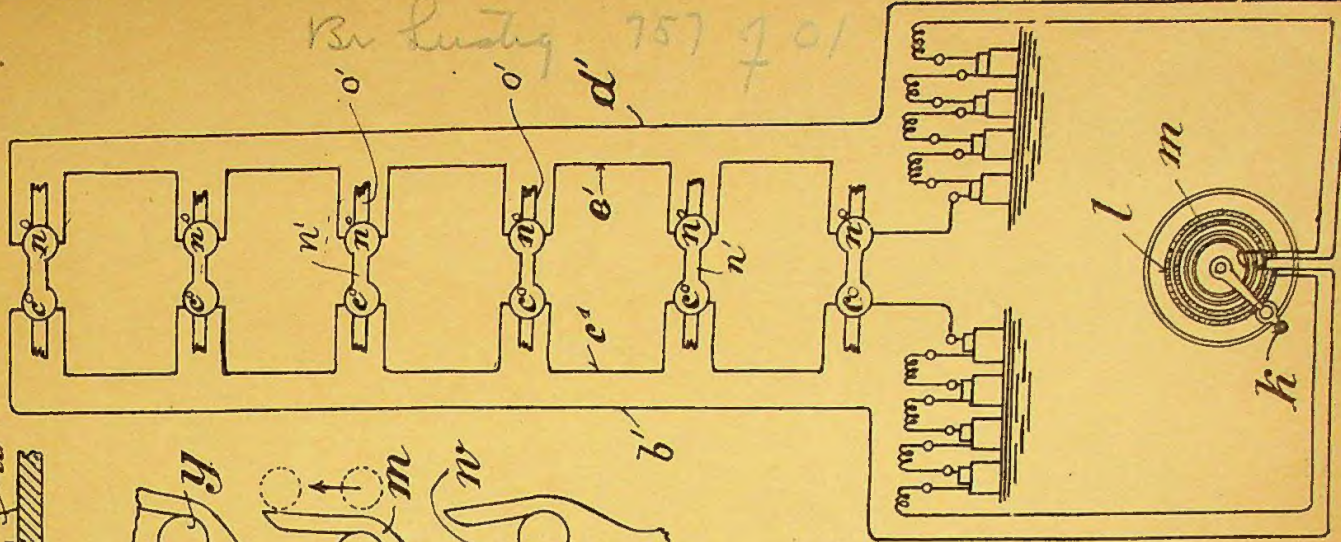
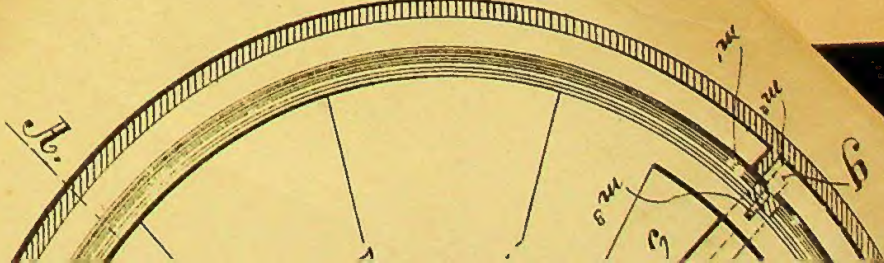
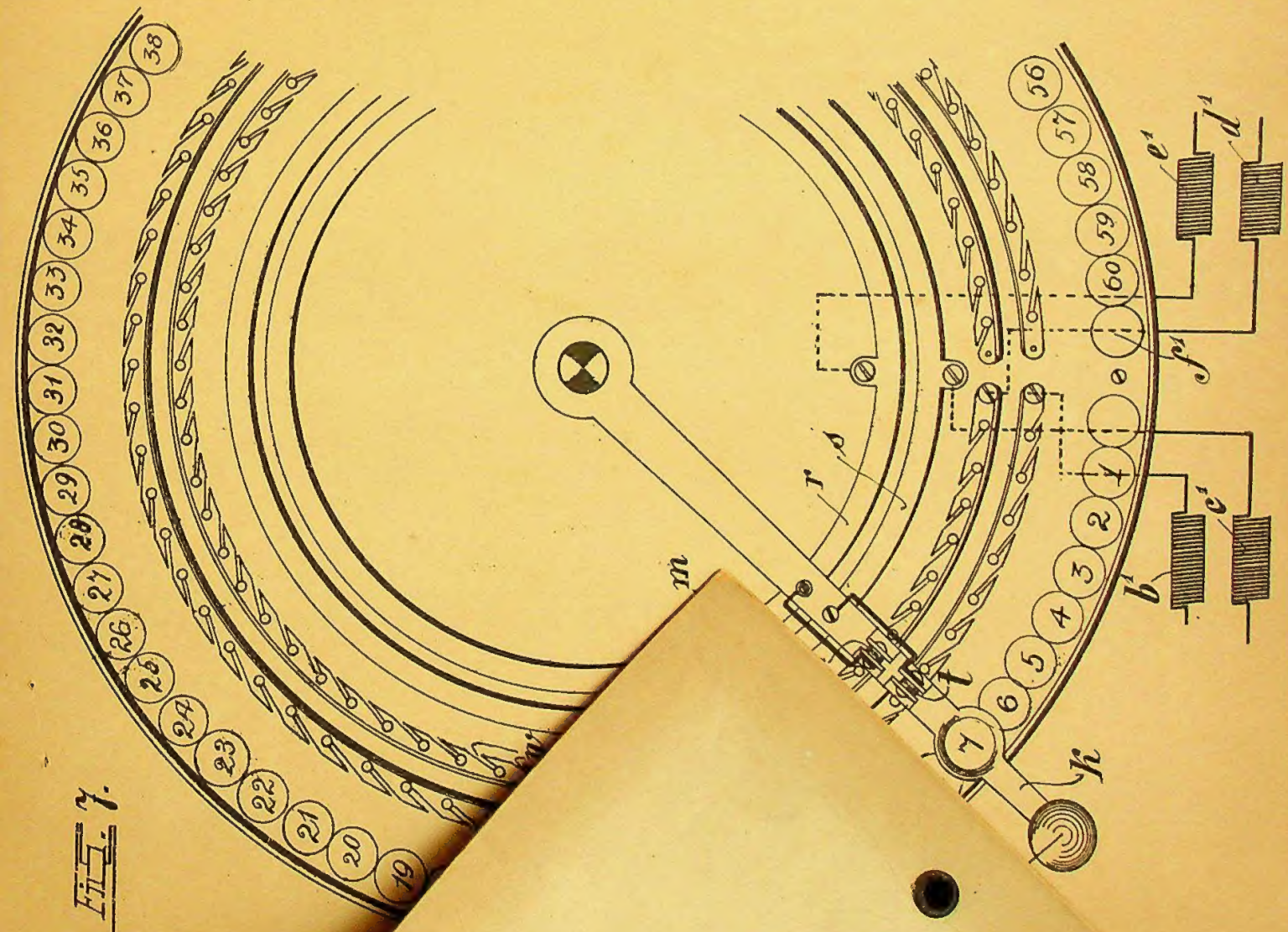


Fig. 7.







Date of Application, 11th Jan., 1901—Accepted, 4th May, 1901

COMPLETE SPECIFICATION.

“An Improved Station Indicator.”

We, ARNOLD LUSTIG, of 11 Queerstrasse, Kattowitz, O/S, Restaurant Keeper, and EMANUEL METH, of Meitzenstrasse 11, Königshutte, O/S, Merchant, both in the Empire of Germany, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to station indicators for use in railway carriages and has for its object to provide a simple and efficient means by which the guard of a train can cause the name of the next station to be shown in each compartment of the train.

10 An improved station indicator made in accordance with our invention consists of an arrangement of dials with the names of the stations written thereon. Each of these dials, of which the required number are provided and connected with the apparatus, is formed with a slot or gap so that when one of the dials is caused to rotate the name of a station is exposed to view and when the dial 15 has made a complete revolution and exposed to view all the names written thereon another similar dial is brought into use and the names thereon can then be seen through the slot of the first or outer dial. When the second dial has made a complete revolution the slot thereof coincides with the slot of the first dial and when the third dial is brought into action the names will appear through 20 the two slots of the first two dials and so forth. By placing the apparatus in the partition wall between two compartments it can be utilized as an indicator for both compartments.

A bell signal may be given at the time when the indicator is changed so as to attract attention thereto.

25 This invention will be readily understood by referring to the accompanying drawings in which Fig. 1 is a sectional elevation of an apparatus constructed in accordance with this invention. Fig. 2 is a cross-section. Fig. 3 is a horizontal section through the casing at a point where the slots of the dials are arrested. Figs. 4, 4<sup>a</sup>, 5 and 6 are details of the apparatus. Fig. 7 is a plan of 30 the switchboard in the guard's van. Figs. 8 and 9 are details of the said switch-board, and Fig. 10 is a diagram of the general arrangement of apparatus and connections as in use.

$a^1 a^2 a^3 a^4 a^5$ , Figs. 1 and 2, are the dials provided with slots  $b$ .  $c$  is an electro magnet actuating a spring-pressed pawl  $d$ .  $e$  is a ratchet wheel.

35 Each dial  $a^1—a^5$  is formed with a recess  $g^1$  and the said dials  $a^1—a^5$  move around the stationary shaft  $k^1$ . In each recess  $g^1$  is fitted a spring  $h^1$  which during the rotation of the dial glides over the shaft  $k^1$ . This latter is flattened at the part corresponding to the complete revolution of the dial, viz at  $i^1$ , and at the completion of the revolution of each dial the spring  $h^1$  thereof reposes 40 upon the said flattened portion  $i^1$  and so retains the dial in position.

The electric connections between the guard's dial, Fig. 7 and the indicator Fig. 1 are such that when the guard moves the hand lever  $k$  of his dial on to the next station the magnet  $c$  (Fig. 1) is excited, and attracts the armature lever  $c^2$  and moves the pawl  $d$  downward. At this downward motion the pawl  $d$  45 is caused to engage in the teeth of the ratchet wheel  $e$  and rotates this latter for one tooth and at the same time moves a double arm  $f$  (Figs. 1 and 4) which is connected with one of the dials say the first  $a^1$  by means of a pin  $g$  shown diagrammatically in Figs. 1 and 2. The part  $g$  is shown separately in Fig. 4<sup>a</sup>. The arms  $f$ , Fig. 4 are fitted at their upper

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end with a guide portion  $l^1$  with guide slot  $l^2$ . The part  $g$  is guided with its middle portion  $m^1$ , Figs. 1, 2 and 4<sup>a</sup>, in the slot  $l^2$ . The upper projection  $m^2$  slides in the grooves  $h$ , Fig. 5 while the lower portion  $m^3$  engages in the notches  $z^1$ — $z^5$  of the dials  $a^1$ — $a^5$  successively and so moves the dials. When the double arm  $f$  has completed an entire revolution, that is to say when all the names of the stations marked on the first dial have been exposed, the pin  $g$  which is guided in a groove  $h$  arrives at the inclined part  $i$ , see Fig. 5 and is thereby withdrawn from the notch  $z^1$  in the first dial  $a^1$  and engages the notch  $z^2$  of the second dial  $a^2$ , from which in turn it is withdrawn to engage notch  $z^3$  and so on, thus leaving each succeeding dial stationary and held by the spring  $h^1$ , and with the slots in such a position that the names on the dial in operation can be seen through the said slots of the other dial, see Fig. 3. In order that this may be accomplished all the notches  $z^1 z^2 z^3$  for the said pin  $g$  are in a line in all the dials. The station indicating dials are turned in the opposite direction by the same hand lever  $k$ . Whilst however for the forward movement of the apparatus the series of contacts  $l$ , Fig. 7 and the electro magnet  $c$ , Figs. 1 and 2 have been utilized the return motion is effected with the aid of the contacts  $m$  and the magnet  $n$ , the latter actuating by a pawl  $o$  the ratchet wheel  $p$  which has its teeth arranged in the opposite direction to those of the ratchet wheel  $c$ . Obviously the remaining parts, *viz.*, the double arm  $f$  with pin  $g$ , groove  $h$  with its inclined portion  $i$  will operate in rotating the dials in the reverse direction in the same manner as at the forward movement of the dials.

In Fig. 10 showing the general arrangement of apparatus and connections in use,  $n^1$  designates the apparatus in plan as shown in Fig. 1;  $c^0$  and  $n^0$  are the parts of the casing beneath which are arranged the corresponding electro magnets  $c$  and  $n$ .  $o^1$  are the partition walls between two carriage compartments.

The guard's dial is arranged as follows:—

A lever  $k$  is capable of being revolved over contact rings  $l m r$  and  $s$ , and is furnished with springs one sliding over the contact ring  $s$ , in connection with the contact maker  $t$  controlling the contact ring  $l$ , and the other spring sliding over the contact ring  $r$  and connecting the same with the contact maker  $u$  controlling the contact ring  $m$ . The said rings  $l$  and  $m$  are formed with slots  $v$  and  $w$  respectively arranged in opposite directions and are constructed of non-conducting material. At the end of each such slot there is a contact pin  $x$  or  $y$ ; all the contact pins  $x$  and all the contact pins  $y$  being electrically connected together. The construction of the contact makers  $t$  and  $u$  is shown in Fig. 8.

Both contact makers are capable of being turned sidewise and also to slide endwise, and are connected with springs  $q^1 q^2$  which tend to keep them in the position shown in Fig. 8. By moving the lever  $k$  the contact makers move along that side of their contact-pin rings  $l m$  on which the slots  $v$  or  $w$  are formed. The slots  $v$  and  $w$  are inclined towards the contact pins in such manner that, as is shown by way of example in Fig. 9, the contact maker  $t$  when moving into the slot  $v$  is caused to move upwardly at an angle so as to be finally at the height of the contact-pin ring  $l$  and is obliged to slide at its further motion over the contact pin  $x$ . On coming thereafter into the next slot  $v$  the spring  $q^1$  forces it back into its initial position. When moved in the opposite direction the contact maker  $t$  is forced out of the slot and slides along the outer periphery of the contact-pin ring  $l$  without being brought into contact with the various contact pins. From this it will be clear that by turning the lever  $k$  in the direction of the arrow, Fig. 7, the contact maker  $t$  can only come into contact with the contact pins  $x$  of its ring  $l$  whilst the contact maker  $u$  is prevented from coming into contact with the pins  $w$  of the contact ring  $m$ . Therefore with this motion the circuit of the electro magnet  $c$  is closed each time the contact maker  $t$  comes against a contact pin  $x$  so as to establish the circuit  $b^1 x t s c^1$ .



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By moving the lever *k* in the opposite direction the contact maker *u* is brought into contact with its pins *y* while the contact maker *t* moves along the exterior of its contact-pin ring *l* without touching the contact pins *x* and in this manner each time the contact maker *u* comes against a contact pin *y* the circuit is closed in the line *d<sup>1</sup> y u r c<sup>1</sup>* of the electro magnet *n*.

In this manner the apparatus works in both directions so as to correctly indicate the stations whether the train is travelling on the up or down lines. In Fig. 7 the numbers 13 and 26 correspond to gaps in the dial; the other numbers represent stations. If all the apparatus are set for the starting station, say "1," it will only be necessary for the guard to move his lever *k* one division before the arrival at every succeeding station and so cause the same to be indicated in all the compartments of the train. The manner of operating the switch lever is shown in Fig. 10. The electro magnets *c* of all the apparatus are connected up one after the other and with the lines *b<sup>1</sup> c<sup>1</sup>*. The electro magnets *n* are connected with the lines *d<sup>1</sup> c<sup>1</sup>*.

It may however happen that for example at the station "6" there are carriages fitted with the apparatus in every compartment but having been brought there by a goods train and therefore without the station indicator being operated. Presuming now that it is required to connect the said carriages to a passenger train coming from "1" and that the indicators are exhibiting the names of various stations on the line, it will be necessary to adjust the said indicator to the station "6" so that they shall disclose the correct names of the succeeding stations during the resumption of the journey. This operation of adjusting the indicators is also effected from the guard's van in the following manner:—The lever *k* is first turned in the direction of the arrow to the end station *f<sup>1</sup>* (Fig. 7) so that all the indicators which disclose the station "6" or a station after "6" are moved to the end station by the action of the electro magnets *c* in a forward direction. Hereupon the lever *k* is turned back to the first station "1" wherein all the dials are caused to participate by the passage of the contact maker *u* over the contact pins *y* and the resulting action of the electro magnet *n* so that now, with the lever *k* on the station "1" all the indicators, including those which previously disclosed another station than "6" are correctly adjusted to the name "1". Finally the guard again moves his lever *k* on to the contact representing the station "6" and so starts all the indicators with this station and can then regularly move all the indicators so as to disclose the succeeding stations in their correct order.

Having now particularly described and ascertained the nature of our said invention, and in what manner the same is to be performed, we declare that what we claim is:—

1. The improved station indicator comprising the combination and arrangement of apparatus all adapted to operate substantially in the manner set forth with reference to the accompanying drawings.

2. In station indicators the special construction and arrangement of dials and mechanism for controlling and operating the same, all substantially as set forth.

3. The improvements in station indicators, comprising the dials *a<sup>1</sup> a<sup>2</sup> a<sup>3</sup>* marked with the names of the stations and provided each with a slot *b* in such a manner as to enable the name of the succeeding station to be seen through the slot *b* in each of the dials, substantially as set forth.

Dated this 11th. day of January, 1901.

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